

Review of: "The Effects of Polypropylene Wastes on the Compressive Strength of Grade 25 Concrete"

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Potential competing interests: No potential competing interests to declare.

Reviewer's comments for the Authors of the paper are as follows:

Generally, the study is well presented and commented. It provides well-structured information on the obtained results.

However, there are some inaccuracies and shortcomings as below.

The title:

The title refers to the contents of the article and the analyzed problem.

Abstract:

-- The last sentence, "*This depicts that polypropylene can be used in producing sustainable concrete*," is general. This comment can be true in the case of used Portland cement.

Section: Introduction

-- The sentence "*In recent years, polyethylene (PE) and polypropylene terephthalate (PET) have been used as sustainable materials for concrete research studies*" should be confirmed by references.

--The sentence about the study by Siddique "...*The study also found that the durability of the concrete was improved by reducing the water-cement ratio*" is not connected with plastic addition, unless the ratio is reduced by a 10% plastic waste additive ?. More comments could be added.

-- In cited studies by Khatib, by Guan, it is noted that there was an increase in strength. It would be interesting, as for other cited results, to specify for what percentage additive values these increases were achieved.

-- Abbreviations LDPE and HDPE should be preceded by full names in the first places of their usage.

-- In the end, a comment about undertaking the study could be given. Why the study was carried out while other researchers investigated the problem. Is there any novelty in the presented study in comparison to other researchers?

Section: Materials and Methods

-- Sizes of coarse and fine aggregate, and of grounded polypropylene, could be given. What mineralogical material is

present in the aggregates?

-- Not understandable (60) value of concrete cast when dimensions are 100mm x 100mm x 100mm

-- More information could be given about methods: slump test, water absorption.

Section: Results and discussion

Sieve analysis test

-- There is no unit on the horizontal axis of the figure. Not a precise title; it should be “*.polypropylene aggregate*”

-- Any comment could be given about the obtained results.

Slump test

-- Should be: at 5%, 10%, 15%, and 20% aggregate replacement, respectively.

Specific gravity test

-- There is no unit for the specific gravity. A way of determination should be commented on in the section about Materials and Methods

Water absorption test

-- There is no comment about the reason for such results.

Compressive strength test

-- The comment “*...an increase was experience at 15% PP concrete for all curing durations of the PP concrete*” is not true because an increase can be seen only after 7 and 14 days. After 21 and 28 days, the compressive strength decreased. Maybe 15% PP is most beneficial to other dosages.

Conclusions

-- There are conclusions, not one conclusion.

-- The conclusion about compressive strength is not good. It is difficult to accept that 28 days' strength less in comparison to reference (0%PP) is optimum. Generally, 28 days' strength of a concrete is worse at each PP dosage.

-- The last conclusion is doubtful because environmental plastic pollution is transferred to plastic pollution of concrete. The presence of plastic in the environment is huge, also in water and air. A problem can be with the utilization of recycled PP concrete. Maybe give application of PP concrete without this problem.